

CITY OF FLAGSTAFF STAFF SUMMARY REPORT

To: The Honorable Mayor and Council

From: Connor Boyle, Stormwater Management
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Date: March 14, 2012

Meeting Date: April 3, 2012



TITLE: CONSIDERATION OF ORDINANCE NO. 2012-03, AN ORDINANCE ADOPTING AMENDMENTS TO CHAPTER 9 OF THE STORMWATER MANAGEMENT DESIGN MANUAL TO COMPLY WITH THE RAINWATER HARVESTING REQUIREMENTS AND ADOPTING A NEW CHAPTER 6 OF THE CITY OF FLAGSTAFF LOW IMPACT DEVELOPMENT (LID) GUIDANCE MANUAL.

RECOMMENDED ACTION:

March 6, 2012: Read Ordinance No. 2012-03 for the first time by title only.

April 3, 2012: Read Ordinance No. 2012-03 for the final time by title only.
Adopt Ordinance No. 2012-03

ACTION SUMMARY:

- **Policy Decision or Reason for Action:**
This Ordinance was requested by the Flagstaff City Council at the October 25, 2011 Work Session Meeting. During the March 6, 2012 Council Meeting, changes to this Ordinance were requested, as well as answers to some questions. This will be explained in this Staff Summary.
- **Financial Impact:**
There will be no increased costs to the City of Flagstaff unless inspection and enforcement efforts are increased.
- **Connection to Council Goal:**
A sustainable community through economic vitality, environmental protection and social inclusion.
- **Has there been a previous Council decision on this topic?: Yes.**
At the October 25, 2011 Work Session, Council decided to accept the Rainwater Harvesting Stakeholder Group's recommendations and incorporate the Water Commission's recommendation to exempt Oasis areas from the Rainwater Harvesting requirement. Staff was directed to develop the Ordinance.
- **Options:**
Approve the Ordinance as written.
Approve the Ordinance as originally recommended by the Stakeholder Group.
Propose changes to the Ordinance as written.
Not approve the Ordinance.

Division Director (Acknowledgment that all reviews have been completed and required approvals initialed below.)

ADDITIONAL INFORMATION:

Previous Issues Regarding RWH:

During the first reading of this Ordinance during the March 6, 2012 Council Work Session several questions were asked concerning the implementation of this proposed RWH Ordinance. The questions and responses are presented below.

- Q.** Sections of the Zoning Code dealing with Accessory Dwelling Units and Structures (Division 10-40.60.020) and Encroachments (Division 10-50.40.020) were unclear as to whether a rain barrel or cistern would be allowed in the setback area. In the Zoning Code Definitions (Division 10-80.10) a Tank is defined as a Structure and therefore, since a rain barrel or cistern could be considered a tank, would fall under the setback requirements of Division 10-40.60.020. This is in conflict with Division 10-50.40.020C (Encroachments) which specifically states: *Rain Barrels and Cisterns are allowed to encroach into side and rear setbacks and no more than 5' into the front setback.* Can this be clarified?
- A.** Yes. Specific definitions for rain barrels and cisterns are in the Definition portion of the Zoning Code (Division 10-80.20). The definition of a Structure in Division 10-80.20 will be modified so that cisterns and rain barrels are not considered Tanks. Roger Eastman, Zoning Code Administer is in agreement with this approach. Following is the modified definition of a structure with the changes shown in bold italics:

Structure: The result of arranging materials and parts together, such as buildings, towers, tanks (***excluding rain barrels and cisterns***), and fences (but not including tents or vehicles) and attaching them to the ground. It shall also mean a mobile home, anything constructed or erected, any building of any kind artificially built up or composed of parts joined together in some definite manner, which is located on or in the ground or is attached to something having a location on or in the ground, including swimming and wading pools and covered patios. Paved areas, walkways, tennis courts, and similar outdoor areas, and fences or walls 3 feet or less in height are not structures

- Q.** The proposed language for the RWH requirement for single family homes could be read as implying that houses should have rain gutters and downspouts installed. Since this was not the intent, can the language be modified?
- A.** The language has been modified to make it clear that rain gutters and downspouts are not required. The modified language is shown below with the changes shown in bold italics.

Single family residential shall utilize passive rainwater harvesting techniques for all new single family dwellings. Roof downspouts, ***if utilized***, shall be directed to landscape and/or natural areas and no direct connection of downspouts to the street, right-of-way or any property line shall be allowed. For driveways that slope to the street, right-of-way or property line, efforts shall be made, insofar as practical, to direct driveway flows into natural or landscape areas. The "Residential Rainwater Harvesting: A Guide to Water-wise Planning and Design" publication provided by the City of Flagstaff shall be utilized to meet this requirement.

- Q.** How will the actual Ordinance 2012-03 change if the Oasis Area exemption (9.2 d.) is removed?
- A.** Beyond actually removing item d. of Section 9.2, the 8th Whereas concerning the recommendation of the Water Commission was deleted. These changes are shown in the attached draft Ordinance.
- Q.** The language in Section 9.4 of the proposed RWH Ordinance is confusing. Can this be clarified?

- A. Yes. The City Attorney's Office, has reworked this section and consolidated the two paragraphs into one. It now reads:

Any Covenant, Condition, or Restriction contained in a deed, contract, security agreement, or other instrument which affects the transfer or sale of real property, which is entered into after May 20, 2012 and which effectively prohibits the installation or use of a rainwater harvesting system, is void and unenforceable.

- Q. Where will the actual residential RWH requirement be? How will the home owner know that there is a requirement?
- A. In consultation with Mike Scheu, COF Building Official, it was decided that the RWH requirement would be added to the approved plans that are returned to the building permit applicant. The requirement will likely be stamped on the plans. Additionally, since many homeowners don't see the plans or move into the house after the builder has completed the house, public education will have to occur. This would include making all local landscaping and nursery companies aware of the new requirement as well as Home Owner Associations.
- Q. Since the use of an active RWH system can reduce, or possibly eliminate, the need for irrigation water, how will potential builders/developers know this is a benefit they can take advantage of?
- A. The overview section of the new Chapter 6 of the Low Impact Development Manual contains several references to the benefits of using an active RWH system, including the reduction in required irrigation water. Additionally, paragraph A.4 of Division 10-50.60.070 (Water Use and Irrigation) of the Zoning Code will be modified to include a specific reference to the benefit of utilizing an active RWH system. Roger Eastman, Zoning Code Administer is in agreement with this approach. Following is the modified paragraph with the changes shown in bold italics:
4. The installation of permanent irrigation systems (See Subsection C. below) in any hydrozone is permitted, but is not required. However, it shall be the responsibility of the applicant, lessee, heirs, assigns, agent, homeowners' association, or other liable entity of the property to ensure that the landscaping is effectively maintained and irrigated as necessary (Refer to Section 10-50.60.080 (Maintenance)). ***This may be done in whole or in part through the use of an active rainwater harvesting system.*** The goal is to ensure that all landscape areas are kept alive with a minimum of water especially after the plants are established in which case (depending on the plant species) watering needs may be reduced except in exceptionally dry or windy conditions.

Additionally, several changes to the proposed ordinance were requested by the City council.

Background/History:

Capturing and collecting rainwater from rooftops can offset the use of potable water for landscape irrigation, and help to conserve a limited, but vital, resource here in the City of Flagstaff. There are two methods of harvesting rain: active and passive. Active RWH collects the rainfall runoff in a tank or cistern where it can be stored and used at a later time, such as in times of little rain. Directing the roof runoff into shallow ground depressions on site created by excavation or berming is known as Passive RWH. The water in these depressions slowly infiltrates, evaporates, and is used by plants.

There are other communities that have implemented RWH Ordinances, primarily in response to diminishing water supplies. Most notably, the City of Tucson has adopted an ordinance that

requires all new non-residential developments to provide 50% of their landscaping irrigation needs through RWH. Santa Fe County, New Mexico has a RWH ordinance that requires non-residential and residential development to implement active RWH.

The City of Flagstaff currently has a Low Impact Development (LID) Ordinance which requires runoff generated from the first one inch of rainfall off all impervious surfaces to be retained and/or infiltrated on-site. The basic philosophy is to allow runoff to infiltrate throughout the site to better mimic the pre-development conditions, allowing groundwater recharge, pollutant removal, and reducing the volume of stormwater entering the stormdrain systems. Rainwater Harvesting is one method of meeting the LID requirement. The LID Ordinance only applies to non-residential developments greater than one-quarter acre.

The majority of the Council perceived a need to explore additional means of conserving the City's water supply and asked that a RWH ordinance be drafted by community stakeholders, rather than City Staff as is typically done. The intent was to follow the model used by the City of Tucson in developing their rainwater harvesting ordinance. Therefore the Rainwater Harvesting Stakeholder (RWH) Group was formed. The Council gave the Stakeholder Group the freedom to develop a draft ordinance in any manner the Group felt was appropriate, and there was no specific expectation for the final draft of the ordinance.

The process of forming the Stakeholder Group began in the spring of 2010 and the composition of the Group was reviewed twice by the Water Commission before their final approval of the RWH Stakeholder Group roster. It was felt this was as balanced a group as could reasonably be obtained, and represented many sectors of our community. The Stakeholder Group initially consisted of 17 members and began meeting on June 2, 2010. By their 17th, and final meeting, 11 members remained.

At the January 25, 2011 Council Work Session, the Rainwater Harvesting (RWH) Stakeholder Group presented their recommendations for a RWH ordinance. The Group's recommendations were many and began with a city wide, holistic view, moved down to focus on general city policies and procedures, and finally provided site specific requirements for RWH, as follows:

1. Active rainwater harvesting systems are mandatory, with a storage tank sized to capture a minimum of 1" of rainfall from the roof, or to provide anticipated annual landscaping water demand, **whichever** is less, for new developments (including those less than ¼ acre) other than single family residential.

EXCEPT:

- In cases in which the developer uses exclusively native/drought-tolerant plants in compliance with Landscaping Standards and utilizes passive rainwater harvesting; or,
 - Where landscaping water demand can be met through other sources of non-potable water.
2. Require passive RWH techniques for all new single-family impervious surfaces per future COF RWH Design Document.

The Council had a number of questions that they wanted addressed before deciding to move forward with an actual RWH ordinance. They also wanted Staff to begin creating the materials the RWH Stakeholder Group recommended be developed to assist in complying with a RWH Ordinance, and present these to the Sustainability and Water Commissions for their recommendations before coming back to Council. The Sustainability Commission recommended the RWH Group recommendations be implemented as is. However the Water Commission recommended the Oasis area (as defined in the recently adopted Zoning Code) be exempt from the non-residential RWH requirement. This recommendation effectively eliminated the need for an active RWH system unless

the Oasis area is increased in size, in which case a minimum 1,000 gallon RWH system is required, per the Zoning Code.

At the October 25, 2011 Council Work Session, Stormwater Staff presented draft versions of a Residential RWH Guide and a new Chapter on active RWH for the existing LID Guidance Manual, as well as responses to Council's previous questions. At this meeting, Council voted to move forward with a RWH ordinance that would incorporate the Water Commission's recommendation that the Oasis area be exempt from the RWH requirement.

At the March 6, 2012 Council Meeting, Stormwater Staff were directed to remove the Oasis exemption (Section 9.2 d.) from the RWH requirement in the proposed Ordinance. There were also a number of questions the Council requested answers for. This meeting was the first reading of the proposed RWH Ordinance.

Key Considerations: Adoption of this ordinance will require certain new construction to utilize rainwater harvesting techniques. Requirements vary based on the type of construction.

Community Benefits and Considerations: This ordinance will reduce the amount of potable water used by single family residences for landscape irrigation.

Community Involvement: Yes. Please see the attached memo.

Financial Implications: The proposed Ordinance alone will not have any financial impact on the City's budget; however, any increased inspection or enforcement related to the residential RWH requirement would likely require additional staff time. We believe that existing Stormwater staff can complete the necessary inspection activities. This would also apply to any additional education and outreach efforts, if any, that would be implemented.

Options and Alternatives: Please see "Options" on page 1.

Attachments

Ordinance 2012-03

New Chapter 6 for the Low Impact Guidance Manual for Site Design and Implementation

New Residential Rainwater Harvesting: A Guide to Water-Wise Planning and Design.

Rainwater Harvesting Ordinance, Community Involvement Memo

INITIALS	RESPONSIBILITY	DATE	INITIALS	RESPONSIBILITY	DATE
	BIDS/PURCHASES			FINANCE/BUDGET	
	GRANTS			CONTRACTS	
DW	LEGAL	3/16/12		IGAS	
	REAL ESTATE				

DATE OF COUNCIL APPROVAL: _____

ORDINANCE NO. 2012-03

AN ORDINANCE ADOPTING AMENDMENTS TO CHAPTER 9 OF THE STORMWATER MANAGEMENT DESIGN MANUAL TO COMPLY WITH THE RAINWATER HARVESTING REQUIREMENTS AND ADOPTING A NEW CHAPTER 6 OF THE CITY OF FLAGSTAFF LOW IMPACT DEVELOPMENT (LID) GUIDANCE MANUAL.

WHEREAS, the City of Flagstaff (the "City") desires to adopt Rainwater Harvesting ("RWH") requirements as part of the Stormwater Management Design Manual; and

WHEREAS, due to the real and continuing problem of drought in the Southwest, the City must secure additional water supplies over the long term that will become more costly over time; and

WHEREAS, the City and its citizens must acknowledge, and successfully manage and coexist with the resource limitations of the arid Colorado Plateau environment; and

WHEREAS, water conservation constitutes a legitimate and critical public health, safety, welfare, economic, and sanitation concern; and

WHEREAS, a citizen Stakeholder Group was formed to develop RWH recommendations for the City; and

WHEREAS, amendments to Chapter 9 of the City of Flagstaff Stormwater Design Manual, a new City of Flagstaff Residential Rainwater Harvesting Guide to Water-wise Planning and Design, and a new Chapter 6 of the City of Flagstaff Low Impact Development ("LID") Guidance Manual were developed based on the Stakeholder Group recommendations; and

WHEREAS, the City of Flagstaff Sustainability Commission has reviewed the RWH amendments and has recommended that the City Council adopt the new requirements; and

~~WHEREAS, the City of Flagstaff Water Commission has reviewed the RWH amendments and has recommended that the City Council adopt the new requirements with the exception that Oasis Zones, as defined in the City Zoning Code, be exempt from the RWH requirement; and~~

WHEREAS, the City Council finds that the adoption of this ordinance will adhere to Council goals related to water conservation and sustainability;

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF FLAGSTAFF AS FOLLOWS:

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SECTION 1. That the City of Flagstaff Stormwater Management Design Manual, Chapter 9 is hereby amended as follows:

CHAPTER 9

LOW IMPACT DEVELOPMENT REQUIREMENTS

FOR INFILTRATION AND REUSE OF STORMWATER AND RAINWATER HARVESTING

Volumetric increases to the city stormwater conveyance system, as the result of increased impervious surface have resulted in the need to upsize stormdrain systems in the City. While detention is effective in controlling peak discharges, the volumetric increase is not abated. Low Impact Development (LID) is an accepted standard in which stormwater is infiltrated and/or reused, resulting in the mitigation of these volume increases.

Low Impact Development will address water quality concerns that can arise when impervious area is added to previously undeveloped sites. Runoff from impervious areas often times contains suspended solids and heavy metals along with other contaminants. Many of the Low Impact Development measure will remove some of these pollutants.

Water conservation is also a consideration when designing for the Low Impact Development requirements. Water can in many cases be reused or directed towards landscape areas in an effort to reduce water consumption.

The use of LID will help control volume increases and hence reducing the cost of upsizing downstream infrastructure as well as promote water conservation.

Active rainwater harvesting provides benefits in addition to volume reduction, including meeting plant water needs during periods of no rain and reducing usage of potable and reclaimed water for irrigation purposes.

9.1. POLICIES

- a. Stormwater LID is required for all new subdivisions, commercial and industrial developments, re-development of non-conforming sites (i.e., existing developed sites that do not have detention that have been razed and vacant for greater than six months), and other developments greater than 1/4 acre in size. LID shall be implemented according to the following schedule as measured from the effective date of Ordinance No. 2009-07:
 1. The first year the program will be voluntary.
 2. The second year developments will be required to retain/infiltrate one half (1/2) inch of runoff from all additional impervious surfaces.
 3. The second year developments will be required to retain/infiltrate one (1) inch of runoff from all additional impervious surfaces. The requirement to detain for the 2-year storm will no longer be required once the 1-inch threshold is implemented.
- b. LID requirements may be waived by the Stormwater Manager for the following:
 1. Single-family residential structure or lot (i.e., not associated with a new subdivision).

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2. Residential subdivisions with lot areas ≥ 1 acre in area, if it can be shown that such a waiver will not result in any adverse downstream effects, nor create any disturbance to the existing drainage patterns both within and adjacent to the subdivision.
 3. Developments less than 1/4 acre or increases in impervious area of $\leq 5,000$ square feet. It must be demonstrated to the satisfaction of the Stormwater Manager that there will be no increase in the potential for damages to adjacent properties and adequate off-site or downstream drainage capacity is available.
- c. For developments requiring LID, all new impervious surfaces shall be infiltrated or reused in accordance with the current applicable standard.
- d. Single family residential shall utilize passive rainwater harvesting techniques for all new single family dwellings. Roof downspouts, if utilized, if utilized, shall be directed to landscape and/or natural areas and no direct connection of downspouts to the street, right-of-way or any property line shall be allowed. For driveways that slope to the street, right-of-way or property line, efforts shall be made, insofar as practical, to direct driveway flows into natural or landscape areas. The "Residential Rainwater Harvesting: A Guide to Water-wise Planning and Design" publication provided by the City of Flagstaff shall be utilized to meet this requirement.
- de. The methodology for determining the required volume of stormwater to be infiltrated or reused is as follows:
- Impervious Surface (square feet) X current requirement (ft.) (e.g. 1/2 inch or 1 inch) = volume requirement
- ef. In order to provide specific guidance for the design of these LID facilities, the City has developed the City of Flagstaff Low Impact Development (LID) Guidance Manual. The Manual is hereby adopted as part of these Requirements.
- fg. The City established a maximum ponding depth of (.3) three-tenths of (1) one foot without an engineered infiltration system.
- gh. The minimum lowest floor elevation of any structure adjacent to an LID facility shall be one (1) foot above the 100-year water surface elevation in the facility or the emergency overflow level, whichever is higher.
- hj. Developments which are phased shall prepare a master stormwater LID plan for the entire development. The master stormwater LID plan must either be implemented with the first phase, if possible, or LID measures must stand alone for each phase. Interim temporary LID facilities may be required for phasing.
- ij. The City of Flagstaff shall only accept large-scale LID facilities for operation and maintenance. The City shall not accept small-scale, local on-site LIDs for operation, maintenance, or liability.
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- jk. Maintenance of local on-site LID facilities shall be the responsibility of the property owner or homeowner's association. The City shall reserve the right to periodically inspect any LID facilities to verify that regular maintenance activities are being performed. Final Plats; Covenants, Conditions, and Restrictions (CC&R's); and/or Development Plans shall include a special note stating that (1) the owner(s) shall be solely responsible for the operation, maintenance, and liability for all LID facilities; and, (2) the City of Flagstaff may periodically inspect said LID facilities to verify that regular maintenance activities are being performed adequately.
- kl. The City of Flagstaff Parks and Recreation Division must review and approve proposed stormwater LID facilities designed within designated public areas or parks. Review and approval from the Parks and Recreation Commission may also be required.
- lm. No part of a private LID shall be constructed in a public right-of-way or public utility easement.

9.2. ACTIVE RAINWATER HARVESTING REQUIREMENTS

Active rainwater harvesting systems are mandatory, with a storage tank sized to capture a minimum of 1" of rainfall from the roof, or to provide anticipated annual landscaping water demand, whichever is less, for new developments other than single family residential (including those less than ¼ acre), EXCEPT:

- a. In cases in which the developer uses exclusively native/drought-tolerant plants in compliance with Landscaping Standards and utilizes passive rainwater harvesting; or
- b. Where landscaping water demand can be met through other sources of non-potable water; or
- c. In areas of food production, such as community gardens; or
- d. In areas in which the Oasis allowance is utilized, as permitted in Section 10-50-60.050.C of the City of Flagstaff Zoning Code.

9.23. SUBDIVISION REQUIREMENTS

All new subdivisions are required to provide LID for the entire subdivision, including the respective one-half of all abutting streets to the subdivision. Two or more subdivisions may join together to provide a common LID facility.

Preliminary Plat submittals shall be accompanied by a preliminary drainage report that identifies LID locations, types and sizes and a preliminary calculation of the required volume.

All Final Plat submittals require a final drainage report, in accordance with Chapter 2 of this manual, which technically demonstrates compliance with City of Flagstaff Floodplain Management Regulations, Stormwater Management requirements, and the drainage policies and design criteria set forth in this manual. This report must be submitted with the subdivision improvement plans and must be accepted prior to recording the final plat.

9.4 RESTRICTIONS ON INSTALLATION OF RAINWATER HARVESTING SYSTEM INVALID

a. Any covenant, condition, or restriction contained in a deed, contract, security agreement, or any other instrument which affects the transfer or sale of real property, which is entered into after May 20, 2012 and which effectively prohibits the installation or use of a rainwater harvesting system is void and unenforceable.
~~Any covenant, condition, or restriction contained in any deed, contract, security agreement, or other instrument affecting the transfer or sale of, or any interest in, real property, which effectively prohibits the installation or use of a rainwater harvesting system is void and unenforceable.~~

~~A deed, contract, security agreement, or other instrument affecting the transfer or sale of, or any interest in, real property entered into before April 20, 2012, shall not be subject to the provisions of this section.~~

SECTION 2: That these Rainwater Harvesting amendments to the City of Flagstaff Stormwater Management Design Manual be incorporated as a new Chapter 6 in the City of Flagstaff Low Impact Development Guidance Manual and be adopted by this reference.

SECTION 3: That the City Clerk be authorized to make housekeeping changes to the City of Flagstaff Stormwater Management Design Manual to comply with the Rainwater Harvesting Requirements; to correct typographical and grammatical errors, as well as errors of wording and punctuation, as necessary; and to make formatting changes needed for purposes of clarity and form, if required.

PASSED AND ADOPTED by the City Council and approved by the Mayor of the City of Flagstaff this _____ day of _____, 2012.

MAYOR

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

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